



Energy Efficiency Programs and Lighting Market Transformation

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Lighting Market Transformation
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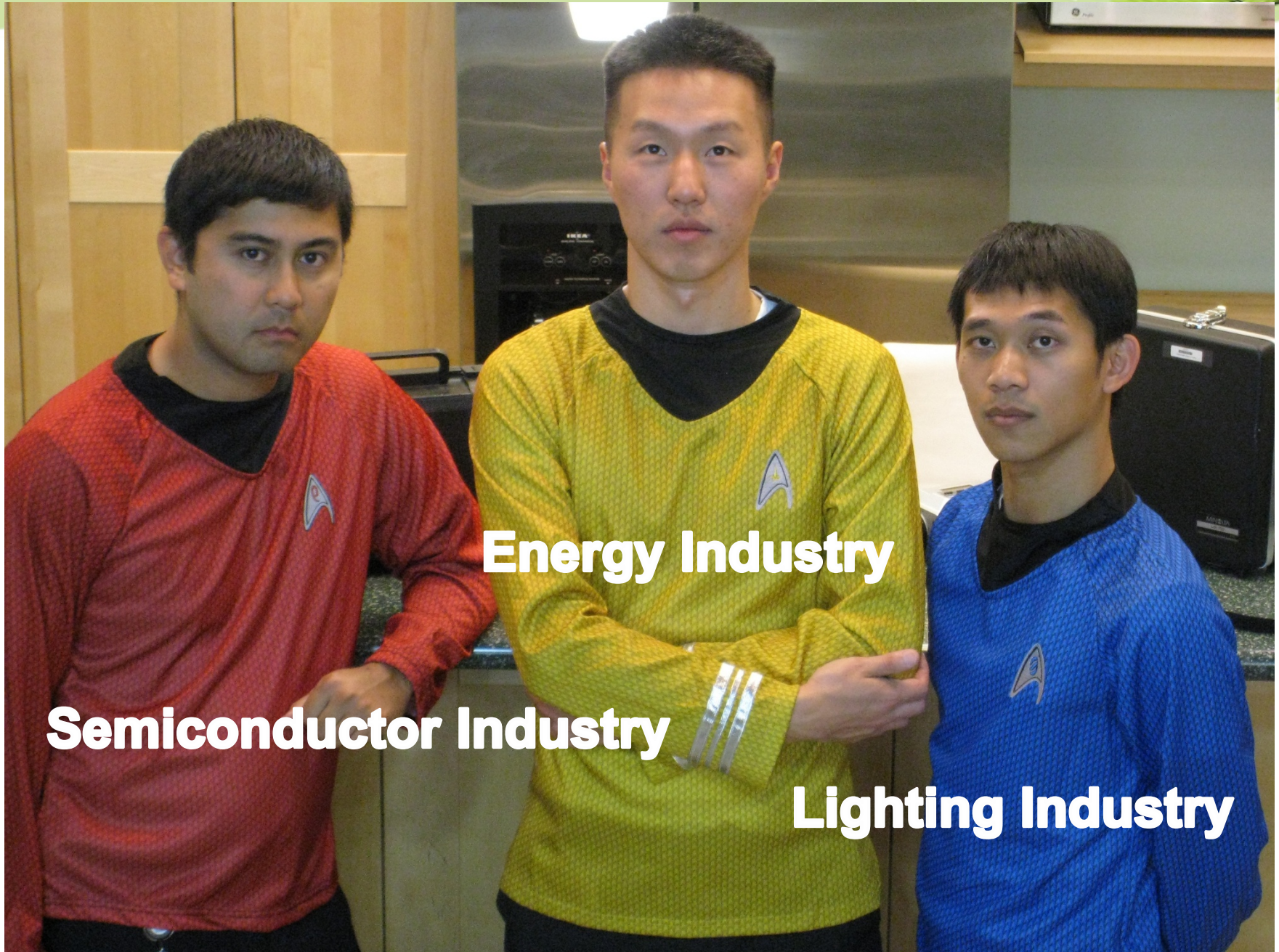
DOE SSL Market Introduction Workshop
Wyndham Grand Downtown • Pittsburgh, PA
July 18-19, 2012



Semiconductor Industry

Lighting Industry

Energy Industry



Energy Industry

Semiconductor Industry

Lighting Industry

Lighting Technology Trend



Fire

- Oil lamps
- Candles
- Gas lamps



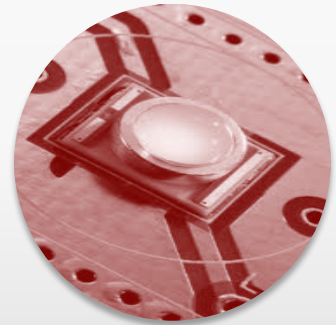
Filament

- Incandescent
- Halogen



Gas Discharge

- Fluorescent
- High Intensity Discharge (HID)



Semiconductor

- LED
- OLED



Lighting Controls Trend



No Controls

- Burning / Not Burning
- On / Off
- No Ballast
- No Driver



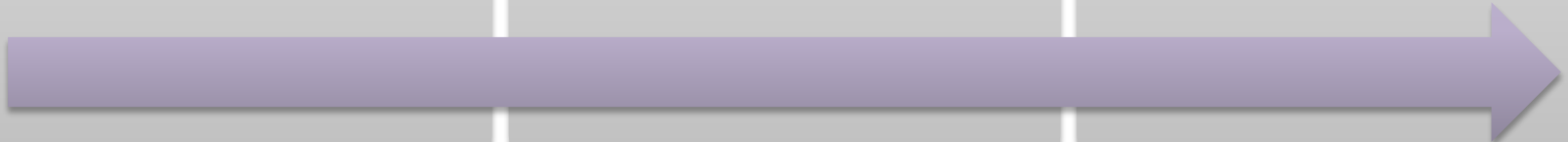
Limited Controls

- Dimming Controls
- Circuit-Level Control
- Ballasts
- Drivers



Full Controls

- Individually Addressable
- Color Changing
- Smart and Automated
- Accessible via Internet



Technological Complexity



Lighting Design Trend



No or Limited Design

- Cookie-Cutter Plans



Beautiful, Elaborate and Dynamic

- Human Factors
- Energy Demand
- Daylighting
- Occupancy



Lighting Design Complexity



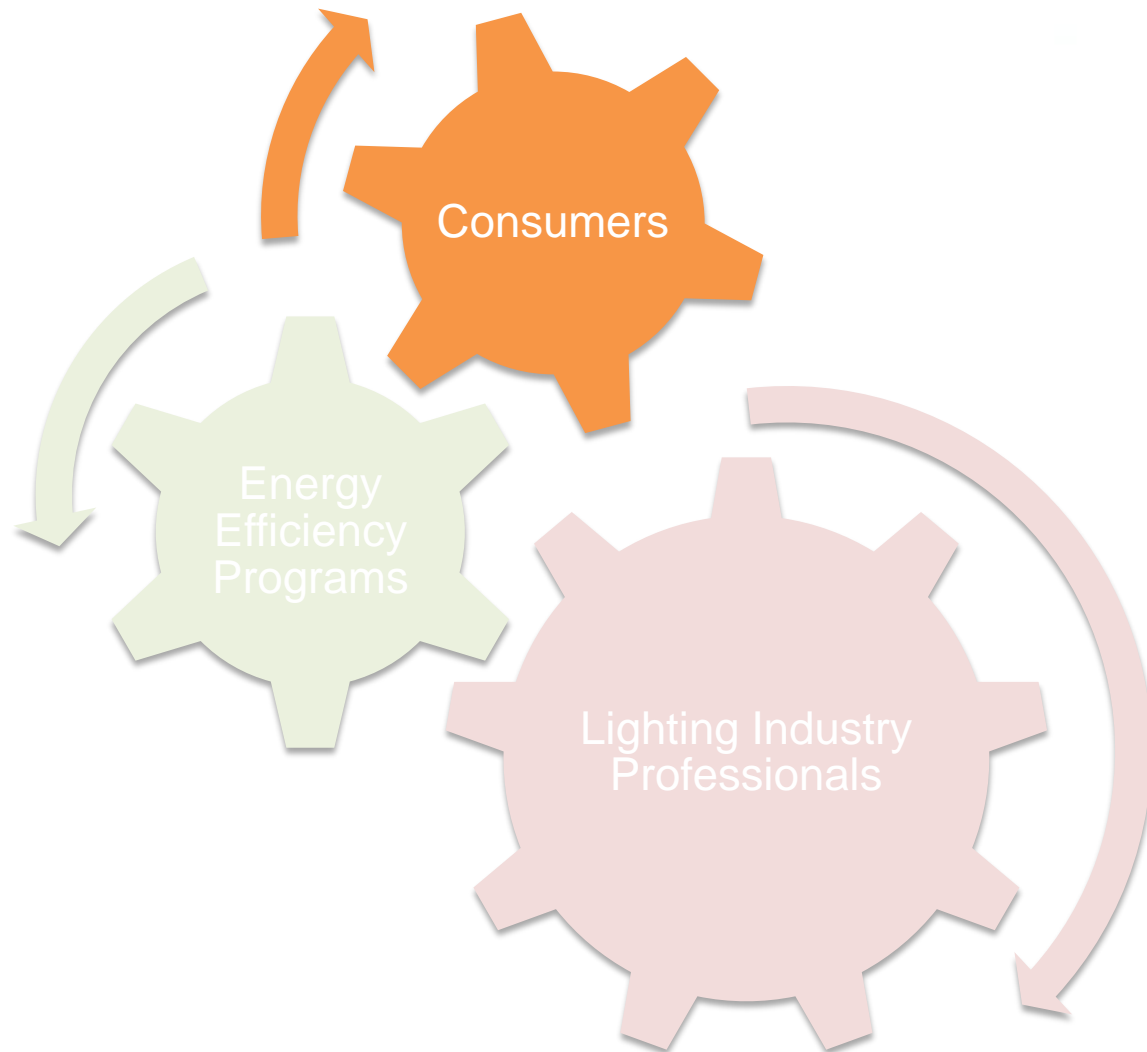
Informational and Educational Needs



Informational and Educational Needs Vary



Informational and Educational Needs Vary




Consumers

❖ Consumers want **simplicity**

- Screw-in Socket
- Lumens vs. Watts
- Lighting Facts vs. LM-79 Report



Lighting Facts™	
LED Product	
Light Output (Lumens)	840
Watts	9
Lumens per Watt (Efficacy)	93
Color Accuracy Color Rendering Index (CRI)	87
Light Color Correlated Color Temperature (CCT) 3100 (Warm White)	
	
2600K	3200K
4500K	6500K
Visit www.lighting-facts.com for the Label Reference Guide.	
<small>All results are according to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.</small>	
<small>Brand X, 18796CH796428954RSHY1234H3</small>	



Consumers

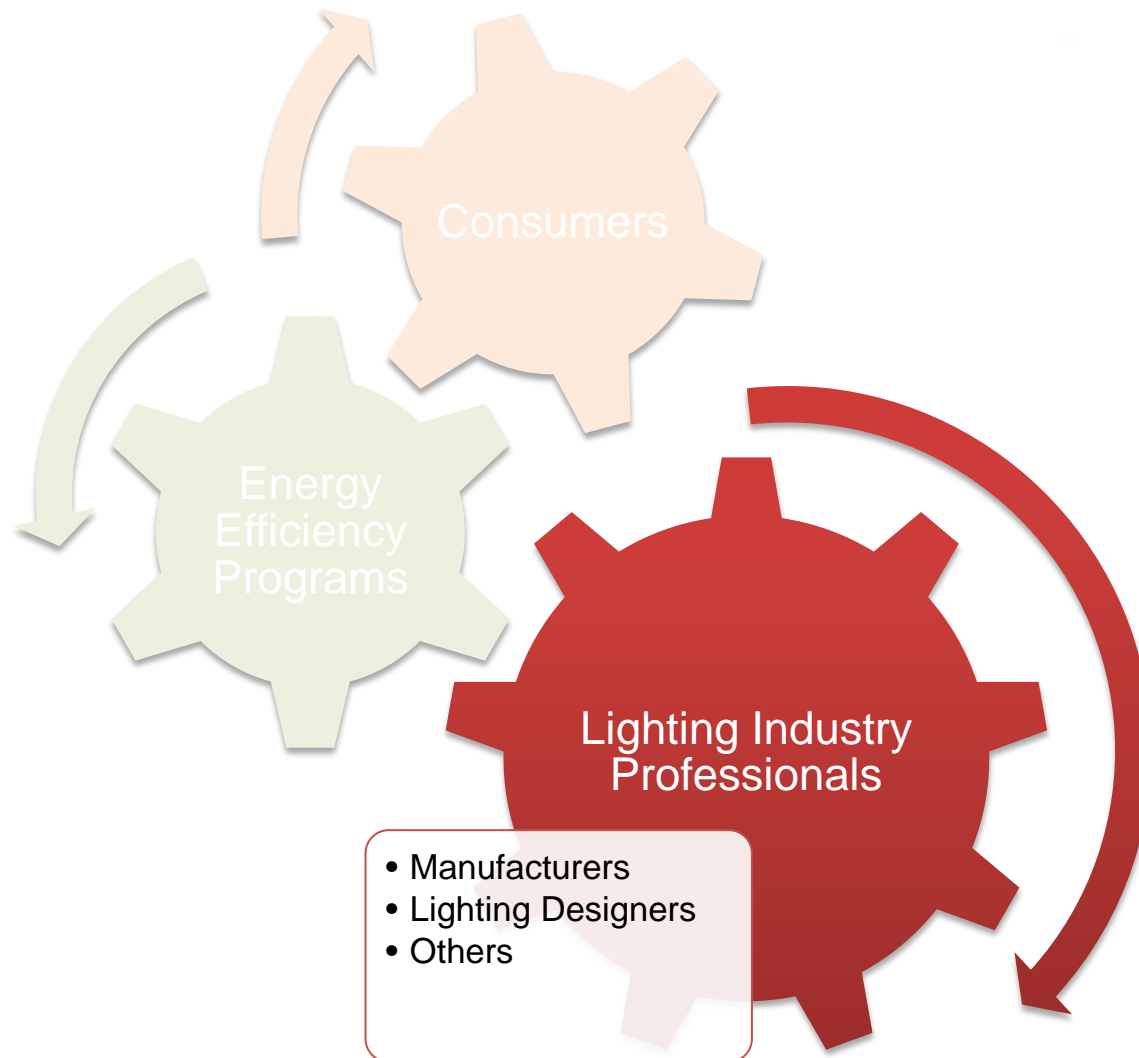
❖ Dimmer Compatibility Solution

- Which dimmer is this lamp compatible with?

Garanimals



Informational and Educational Needs Vary



Lighting Industry Professionals

❖ Industry Standards Are Important

- Photometrics, lifetime, dimming performance, etc.



Manufacturer

- Enable proper **product** engineering and design



Lighting Designer

- Enable proper **lighting** design and application

❖ Leverage and support the development of these important standards

Lighting Industry Professionals

❖ Design Guides

- Product Engineering
- Lighting Design



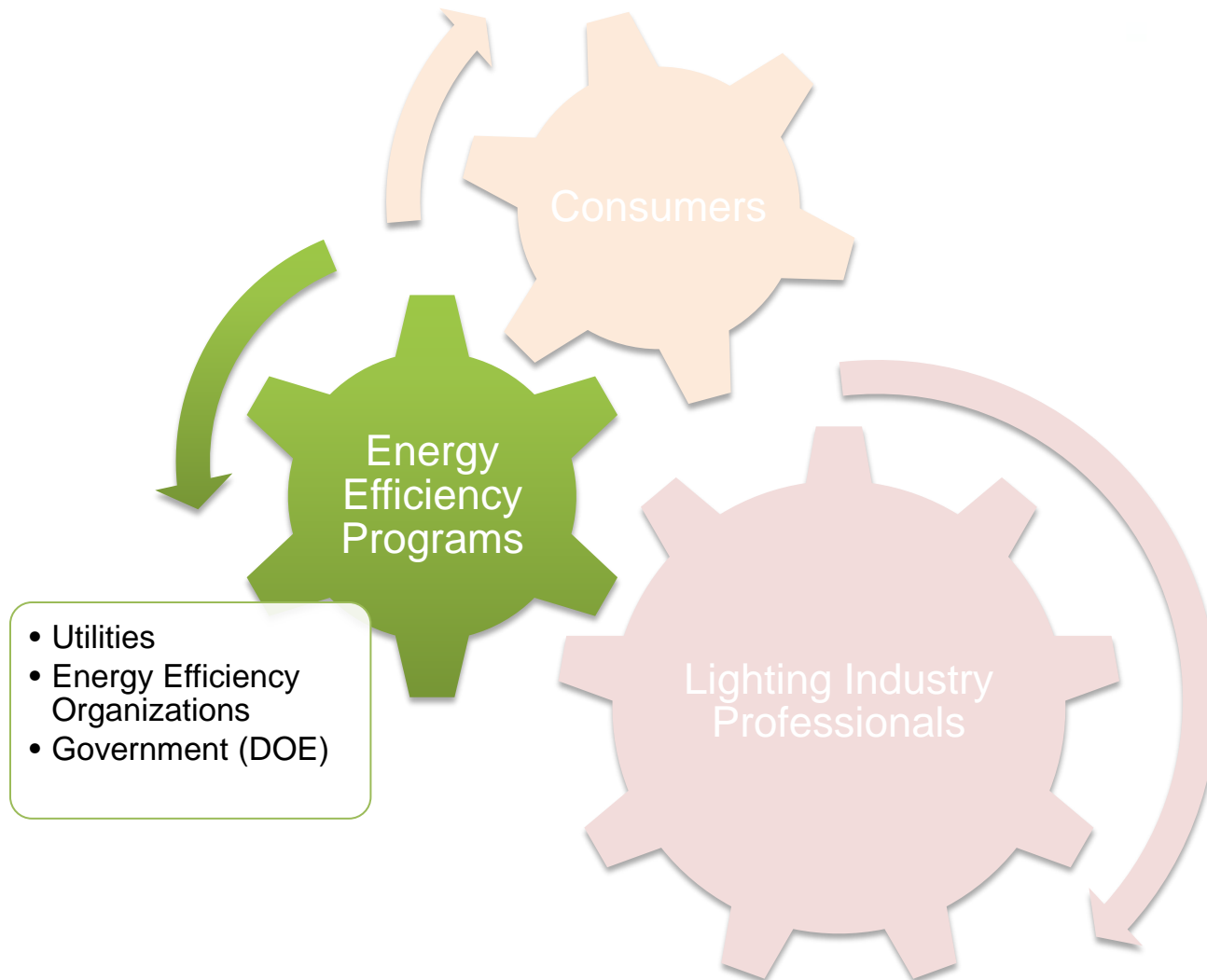
❖ Lighting Design Guides

- Application-specific best practices
- Utility Support Examples
 - Advanced Lighting Guidelines
 - Lighting Installation Certification
 - Lighting Application Certification



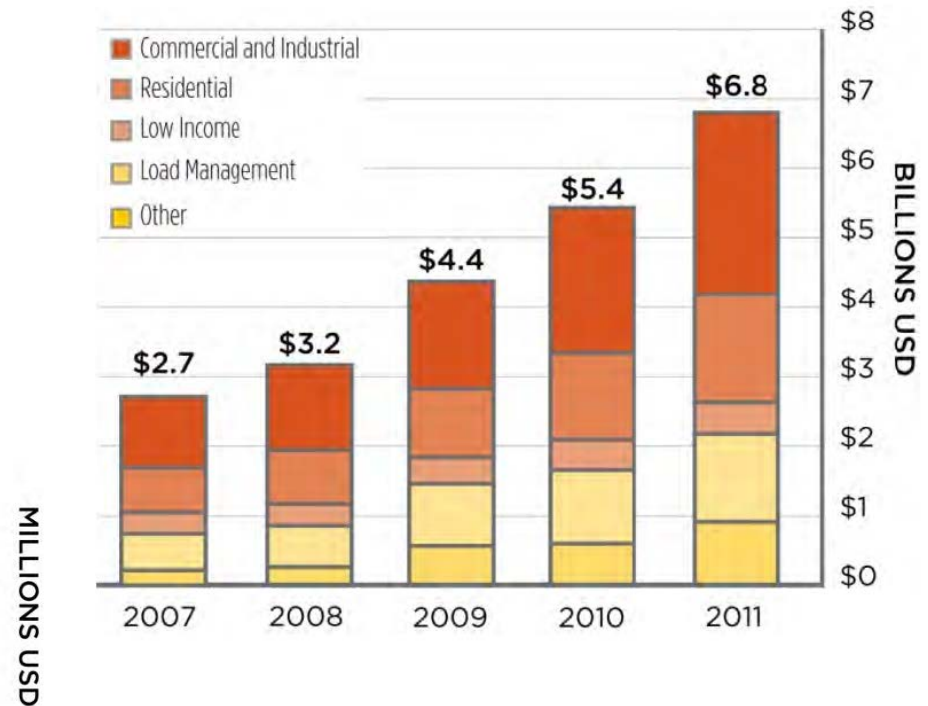
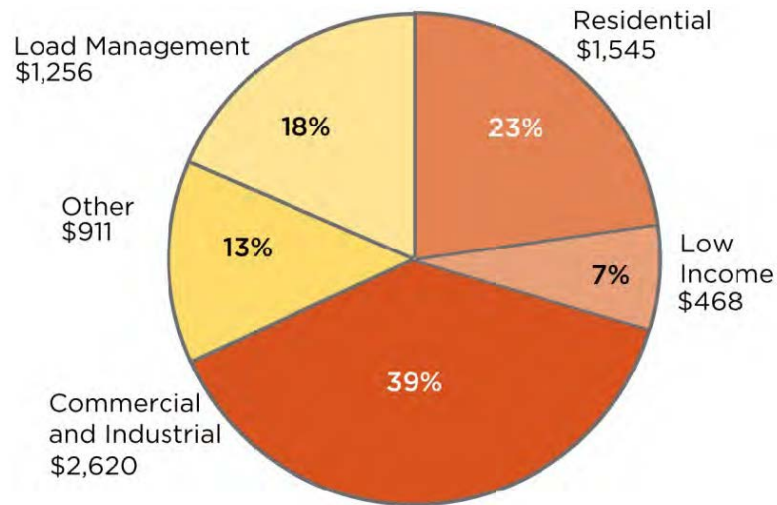
National Advanced Lighting
Controls Training Program

Informational and Educational Needs Vary



Energy Efficiency Ecosystem

- ❖ US Energy Efficiency Programs Invested over \$6.8 Billion in 2011
- ❖ Energy Efficiency budgets have been increasing every year



State of the Efficiency Program Industry
Consortium for Energy Efficiency (CEE), 2012

Energy Efficiency Programs

Pop Quiz:

Industry A

- Fast-Paced Industry
- Huge product variation

Industry B

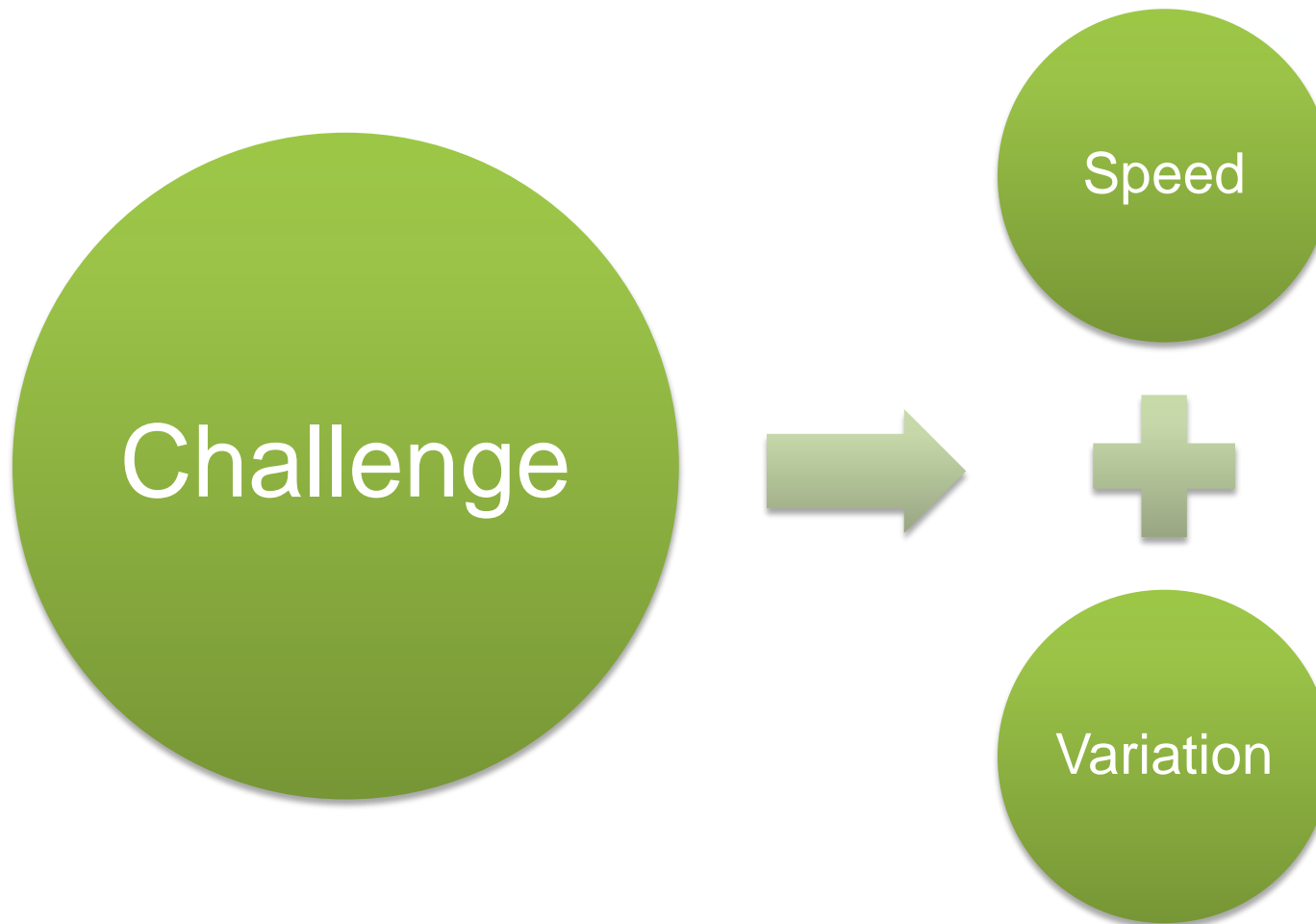
- Slow regulated industry
- Single product

Answer:

Industry A = LED Industry

Industry B = Utility

Energy Efficiency Programs



Energy Efficiency Programs

Information About

Why we want it

Our current solution

What would help us

Quality and Performance

Persistence of Energy Savings

Qualified Product Lists

Projections of Performance

Value and Cost

Cost Effectiveness

Average Conservative Values

Projections of Cost

Energy Efficiency Programs

❖ Persistence of Energy Savings

- Do not want to repeat CFL delay

❖ Qualified Product List

- A good way to ensure efficiency programs support only quality products

❖ Cost Effectiveness

- Helps determine incentive amount and incentive delivery channel

❖ Projections of Performance and Cost

- Helps with program planning, which takes a long time
 - Incentive levels
 - Incentive delivery channels
 - Education approaches

Energy Efficiency Programs

Application Roadmap

- ❖ Prioritize energy savings opportunities
 - Energy savings potential
 - Cost to overcome barrier

- ❖ Savings and cost projections over time



The Solution

The key to **accelerating** lighting market transformation is to leverage **focused** information and **targeted** education through **collaboration** and **coordination** across all market actors.



Teamwork is Key!





Thank You!

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